

USER MANUAL

CARELINE®
IMPROVING EFFICIENCY

TWINDRIVE® TDC



To learn more about LINAK please visit:
WWW.LINAK.COM

LINAK® 
WE IMPROVE YOUR LIFE

Contents

Preface	4
Important information	5
Safety instructions	5
Before installation, reinstallation or troubleshooting	5
Before start-up	5
During operation	5
Repairs	6
Manufacturer's declaration	6
Misc. on the TWINDRIVE® TDC system	7
Environmental conditions	7
Key to symbols.....	8
Description of the TWINDRIVE® TDC system.....	9
Mounting guidelines for the TWINDRIVE®	10
Locking mechanism	11
Labels for TWINDRIVE® TDC	12
Accessories and repair	13
Disposal of LINAK's products	14
How to mount.....	15
Drawing appendix	17
Troubleshooting	18
Addresses	20

Preface

We are delighted that you have chosen a product from LINAK A/S. LINAK systems are high-tech products based on many years of experience in the manufacture and development of actuators, electric control boxes, controls and chargers. We are also constantly improving our products to meet customer requirements.

This User Manual will tell you how to install, use and maintain your LINAK TWINDRIVE® products.

We are sure that the TWINDRIVE® products will give you many years of problem-free operation. Before our products leave the factory they undergo full function and quality testing. Should you nevertheless experience problems with your systems, you are always welcome to contact our service departments or service centres.

LINAK subsidiaries and distributors all over the world have authorised service centres, which are always ready to help you.

LINAK provides a warranty on all its products. This warranty, however, is subject to correct use in accordance with the specifications, maintenance being done correctly and any repairs being carried out at a service centre, which is authorised to repair LINAK products.

Changes in installation and use of LINAK systems can affect their operation and durability. Changes must therefore only be made by agreement with LINAK A/S and are made at your own risk.

LINAK A/S

Important information

Important information on LINAK® products can be found under the following headings:



Warning!

Failure to comply with these instructions may result in accidents involving serious personal injury.



Do not expose the TDC to any kind of load or force direct on the housing.



At extreme wear of the head end or foot end actuator in the TDC there is a risk of it falling down wards without any warning.



Failing to follow these instructions can result in the product being damage or being ruined.

Safety instructions



Safe use of the system is possible only when the operating instructions are read completely and the instructions contained are strictly observed.

Failure to comply with instructions marked with the "NOTE" symbol may result in serious damage to the system or one of its components.

Persons who do not have the necessary experience or knowledge of the product/products must not use the product/products. Besides, persons with reduced physical or mental abilities must not use the product/products, unless they are under surveillance or they have been thoroughly instructed in the use of the apparatus by a person who is responsible for the safety of these persons.

Moreover, children must be under surveillance to ensure that they do not play with the product.



It is important for everyone who is to connect, install or use the systems to have the necessary information and access to this User Manual.



If there is visible damage on the product it must not be installed.

Before installation, de-installation or troubleshooting:

- Stop the TDC
- Switch off the power supply and pull out the mains plug.
- Relieve the TDC of any loads, which may be released during the work.

Before start-up:

- Make sure that the system has been installed as instructed in this User Manual.
- Make sure that the voltage is correct before the system is connected to the mains. (See TDC label on page 10).

(continued)

- System connection. The individual parts must be connected before connection to the mains.

During operation

- Take care that the cables are not damaged or get jammed.
- Unplug the mains cable on mobile equipment before it is moved.
- The products must only be used in an environment, which corresponds to their IP protection or where no IP protection is required.

Repairs

The plastic housing of the TDC is welded together, which means it is not possible to open and close it again, so it cannot be repaired.

A TWINDRIVE TDC under warrenty must always be returned to authorised LINAK workshops.

Warning!

 If the TWINDRIVE® TDC product is opened, there will be a risk of subsequent malfunction. Furthermore the warranty will not cover, when the product has been opened by unauthorized personnel.



WE IMPROVE YOUR LIFE

DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

LINAK A/S
Smedevænget 8
DK - 6430 Nordborg

Name and address of the person authorized to compile the relevant technical documentation:
John Kling, Group Headquarters, Guderup, DK-6430 Nordborg, email jkl@linak.com

Herewith declares that LINAK Actuators and Actuator Systems comply with the following parts of the Machinery Directive 2006/42/EC, ANNEX I, *Essential health and safety requirements relating to the design and construction of machinery:*

- 1.5.1 Electricity supply: *Directive 2006/95/EC on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.*
1.5.10 Radiation, 1.5.11 External radiation: *Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility.*

The relevant technical documentation is compiled in accordance with part B of Annex VII and that this documentation or part hereof will be transmitted by post or electronically to a reasoned request by the national authorities.

This partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of this Directive, where appropriate.

Date: 2010-01-01

Signature:

John Kling
Certification and Regulatory Affairs

Misc. on the TWINDRIVE® TDC system

This system is a TWINDRIVE system developed for care beds and home care beds.



We advise children and disabled persons not to use the TD1 system without supervision.

Warranty

There is an 36 months' warranty on the TWINDRIVE® TDC product against manufacturing faults calculated from the production date of the individual products (see label). LINAK A/S' warranty is only valid in so far as the equipment has been used and maintained correctly and has not been tampered with. Furthermore the system must not be exposed to violent treatment. In the event of this, the warranty will be ineffective/invalid.

For further details, please see LINAK A/S ordinary conditions of sale.

Maintenance

Clean dust and dirt on the outside of the system, at appropriate intervals and inspect them for damage and breaks.

Inspect the connections, cables and plugs and check for correct functioning as well as fixing points.



Clean with a damp cloth.



Never spray directly on the TDC with a highpressure cleaner.

Environmental conditions:

Environment conditions	
Operating:	
Temperature	10°C to 40°C
Relative humidity	30% to 75%
Atmospheric pressure	700 to 1060 hPa
Storage:	
Temperature	-10°C to +50°C
Relative humidity	20% to 90% @ 30°C – not condensing
Atmospheric pressure	700 to 1060 hPa

To power off the system - pull out the mains plug

Key to symbols

The following symbols are used on the label of the control box.

	Type B equipment, as per EN 60601-1		Demko approval
	Protection against contact/foreign matter (first character) and water (second character) as per EN60529		C-TICK
	Class 2 equipment		Electronic scrap
	For indoor use		CE Mark
	Thermal cutout in transformer		Electronic scrap (China)
	Double insulated transformer		
	Alternating Current		
	Direct current		
	Attention, consult accompanying documents		

Description of the TWINDRIVE® TDC system

Each TWINDRIVE® TDC unit consist of 2 internal motors and a built-in control unit which makes it a very compact unit. The mains cable is exchangeable. Only the handset and optional 1 - 2 external actuators must be connected.

Application of the TWINDRIVE® TDC system:



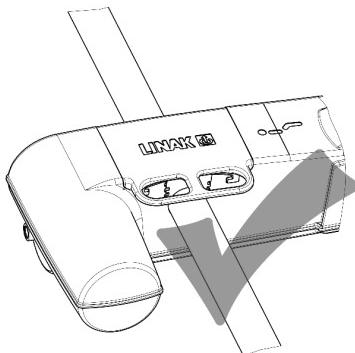
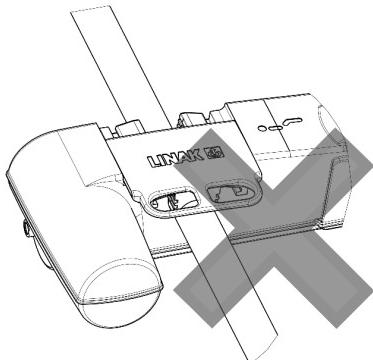
Irrespective of the load the **Duty cycle: Internal: 10% max. 2 min continuous use followed by 18 min not in use. External: 5 % max. 1 min continuous use followed by 19 min. not in use** stated in the data sheets, must **NOT** be exceeded as this will result in a superheating of the motor and the spindle nut. Exceeding the duty cycle will result in a dramatic reduction of the life of the system and transformer.



Do not turn on the system if it is not mounted in a bed.



Do not open the closing device on TDC during the operation as this may cause malfunction and possibility of personal injuries.



Be sure that the closing devices are in place before TDC is used.

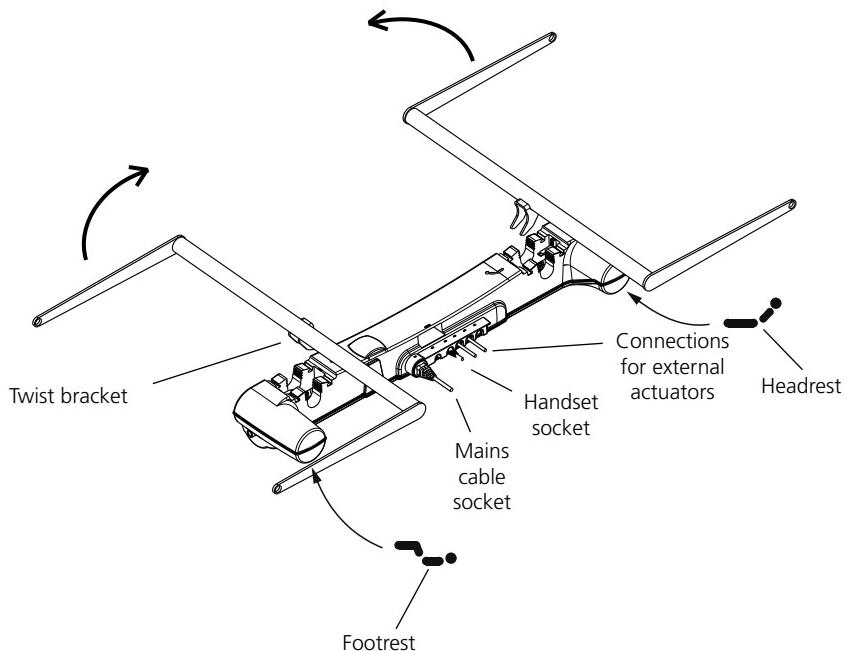
Optional

- Exchangeable and different mains cable
- 1 - 2 actuators (LA27)
- HB / HL Handsets

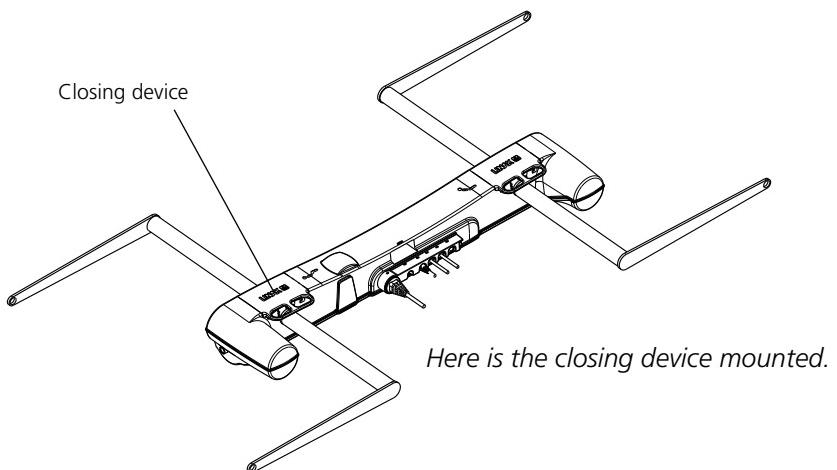
Classifications:

- Class I or Class II
- Type B Applied part
- IPX4
- Not for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide

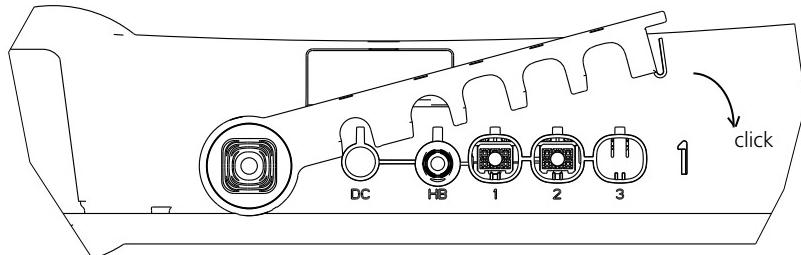
Mounting guidelines for the TWINDRIVE® system



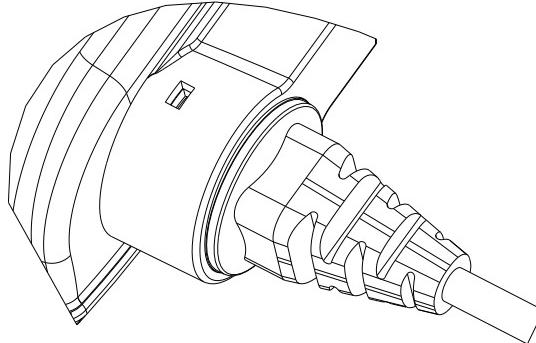
*Figure 1
(Assembly overview)*



Locking mechanism



The TDC is equipped with a locking mechanism that keeps the cables locked in place. Open the locking mechanism with the help of a tool, plug in the cables and lock it again.

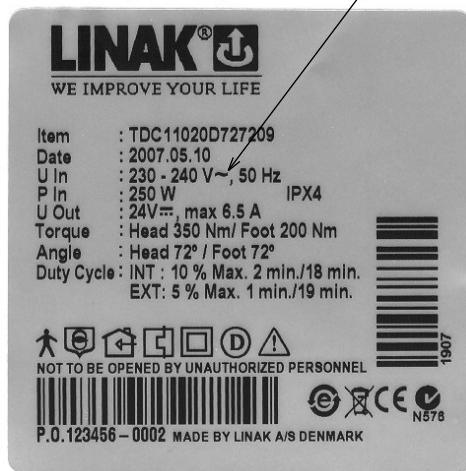


Dismounting of the mains cable

To dismount the mains cable please press firmly with a pair of tongs on both sides of the locking mechanism fixed to the mains cable.



Please note that the TDC must only be connected to the voltage stated on the label.



EOP

EOP (Electronic Overload Protection) is implemented in the control unit and protects the actuator and application in case of an obstruction (heavy overloaded). If the actuator becomes obstructed, the current increases to a level, which may damage the actuator. The EOP circuit monitors this and cuts off the current at a predefined and safe level.

Each actuator must never be loaded more than stated on the type plate.

The EOP circuit is common for all motors/actuators and measures the current sum of all running actuators together.

Depending on the type of external actuator might it not be possible to run both with spec. load.

Accessories and repair

Ordering accessories

Order from your nearest LINAK® dealer or subsidiary.

Accessories

Please contact your nearest LINAK dealer for information.



Warning!

By unauthorised opening of the system there is a risk that it may malfunction at a later date. Furthermore the warranty will not cover, when the product has been opened by unauthorized personnel.

Disposal of LINAK's products

As LINAK's customers often ask us how our products can be disposed of or scrapped we have prepared this guidance that enables a classification to different waste fractions for recycling or combustion.

Guidance

We recommend to disassemble our product into as many fractions as possible at the disposal and try to make it recyclable. As examples of main groups within waste fractions we can mention:

Metal, plastic, cable shoe, combustible waste and collection for recovery.

Some of these main groups can be subdivided, e.g. metal can be divided into iron, stainless steel and aluminium and alloy steel. Plastic can e.g. be divided into ABS, PA, PE and PP.

Main groups of disposal

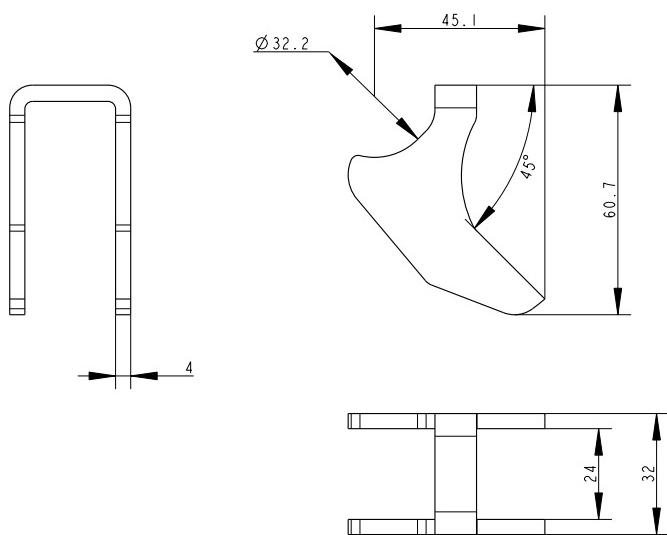
As an example of sorting, please find below a list stating in which recycling groups the different components of LINAK's products ought to be placed:

Product	Components	Recycling group
TDC:	Spindle and motor Plastic housing Print Transformer Cable	Scrap Plastic recycling or combustion Electronic scrap Metal recycling Cable scrap

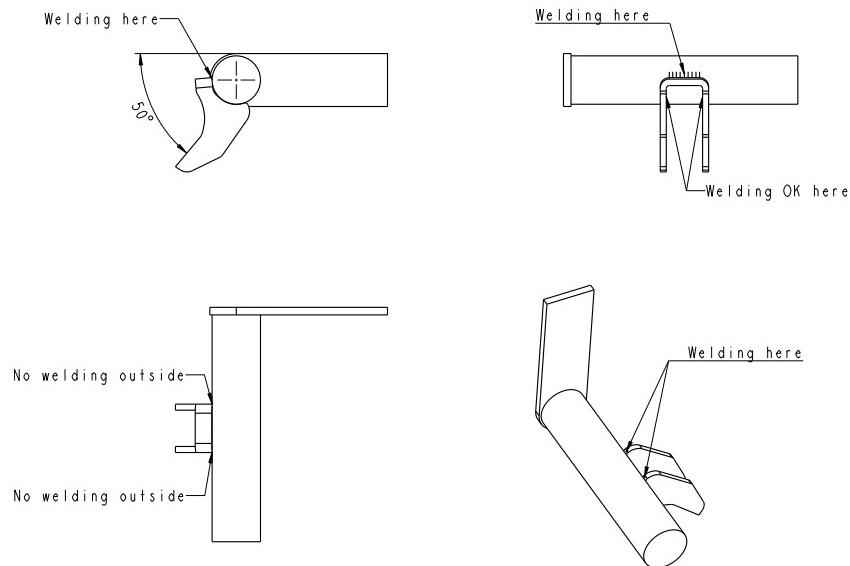
By now all our casted plastic parts are supplied with an interior code for plastic type and fibre contents, if any.

How to mount (in chronological order): Welding the twist bracket on the frame (0701030)

1) For the TDC it is important that one does not weld on the outside of the twist bracket because there is not room for a welding seam in the motor housing. One may weld the bracket along the whole length of its ends.

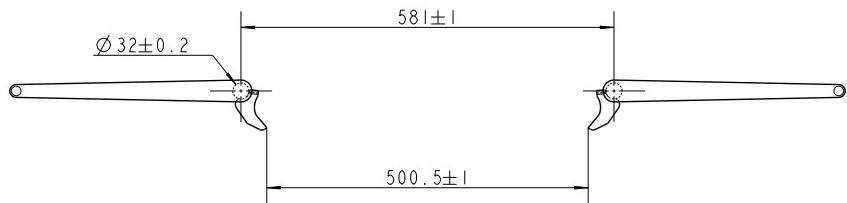


2) To maintain the correct angle of rotation of the head rest and the foot rest it is important that the twist bracket is welded according to the below instructions. Non compliance with the instructions could lead to a smaller angle of rotation or in a worst case damage to TDC.

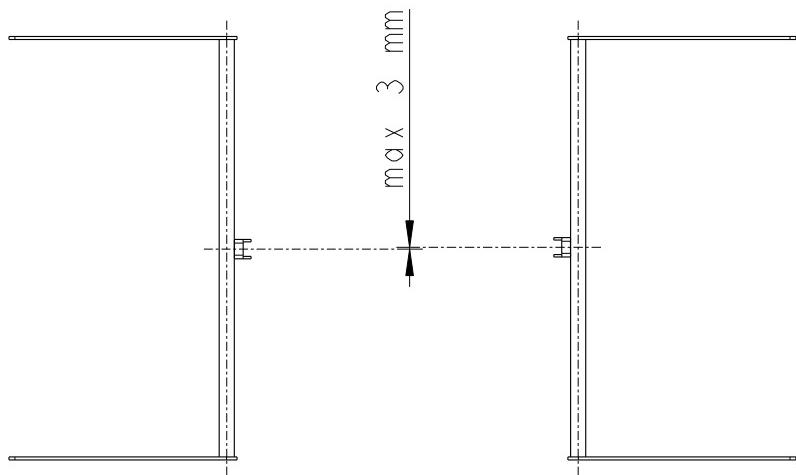




It is very important that the axle distance is kept.

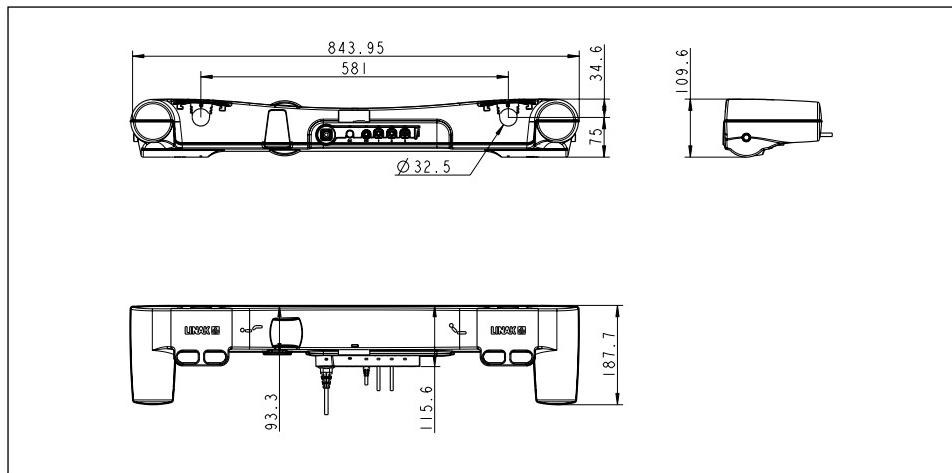


Tolerance of the parallels:



DRAWING APPENDIX

TWINDRIVE® TDC System:



Troubleshooting

Symptom	Check	Try
The TDC does not run	Is the main connected to the control box?	Try to connect a lamp or similar to the main supply to check that the supply voltage is OK
	Are all plugs mounted correctly?	Check all connections
	Are there any visible damages on cables, controls, the TDC or actuators?	Damaged parts must be exchanged – contact Service
The TDC stops and can only run in the opposite direction	Is the application in fully extracted position?	When the application has reached its upper position it can only run downwards
	Is there much load on the application compared to when it functioned normally?	Remove some of the load and try again
The TDC does not run at all. No movement is observed	Defective handset Poor connection. Mains cable fallen out. No voltage on the mains cable	Check all connections. Check that there is voltage in the mains plug. Connect a handset that you know is OK. If it can run the handset is defective. If this does not help the TDC might be defective
Not all actuator run when you run the TDC	The actuator(s) that do not run are defective or the cable connection for the actuator(s) are not OK	Change actuator/cable, starting with the cable
The application is in lower position and will not run up. You cannot see whether all actuators are moving	The application is overloaded	Remove some of the load on the application.
	One or more actuators are defective or the cable connection between actuator(s) and the TDC is not OK	Try to exchange the motor cable before exchanging the actuator

LINAK APPLICATION POLICY

The purpose of the application policy is to define areas of responsibilities in relation to applying a LINAK product defined as hardware, software, technical advice, etc. related to an existing or new customer application.

LINAK products as defined above are applicable for a wide range of applications within the Medical, Furniture, Desk and Industry areas. Yet, LINAK cannot know all the conditions under which LINAK products will be installed, used, and operated, as each individual application is unique.

The suitability and functionality of the LINAK product and its performance under varying conditions (application, vibration, load, humidity, temperature, frequency, etc.) can only be verified by testing, and shall ultimately be the responsibility of the LINAK customer using any LINAK product.

LINAK shall be responsible solely that the LINAK products comply with the specifications set out by LINAK and it shall be the responsibility of the LINAK customer to ensure that the specific LINAK product can be used for the application in question.

FACTORIES

CHINA

LINAK (Shenzhen) Actuator Systems, Ltd.
Phone: +86 755 8610 6656
Fax: +86 755 8610 6990
E-mail: sales@linak.cn
www.linak.com

DENMARK

LINAK A/S - Group Headquarters, Guderen
Phone: +45 73 15 15 15
Fax: +45 74 45 80 48
Fax: +45 73 15 16 13 (Sales)
E-mail: info@linak.com
www.linak.com

SLOVAKIA

LINAK Slovakia s.r.o.
Phone: +421 51 75 63 414
Fax: +421 51 75 63 410
E-mail: jp@linak.sk
www.linak.com

USA

LINAK U.S. Inc. North and South American Headquarters
Phone: +1 502 253 5595
Fax: +1 502 253 5596
E-mail: info@linak-us.com
www.linak-us.com

SUBSIDIARIES

AUSTRALIA

LINAK Australia Pty. Ltd.
Phone: +61 3 8796 9777
Fax: +61 3 8796 9778
E-mail: sales@linak.com.au
www.linak.com.au

AUSTRIA

LINAK Repräsentanz Österreich (Wien)
Phone: +43 (1) 890 7446
Fax: +43 (1) 890 744615
E-mail: info@linak.at
www.linak.at

BELGIUM & LUXEMBOURG

LINAK Actuator-Systems NV/SA
Phone: +32 (0)9 230 01 09
Fax: +32 (0)9 230 88 80
E-mail: info@linak.be
www.linak.be

BRAZIL

LINAK Do Brasil Comércio De Atuadores Ltda.
Phone: +55 (11) 2832 – 7070
Fax: +55 (11) 2832 – 7060
E-mail: info@linak.com.br
www.linak.com.br

CANADA

LINAK Canada Inc.
Phone: +1 502 253 5595
Fax: +1 416-555-7720
E-mail: info@linak.ca
www.linak.ca

CZECH REPUBLIC

LINAK C&S R.O.
Phone: +420581741814
Fax: +420581742042
E-mail: ponizil@linak.cz
www.linak.cz

DISTRIBUTORS

ARGENTINA

Novotec Argentina SRL
Phone: +54 (11) 4303-8900
+54 (11) 4303-8989
Fax: +54 (11) 4032-0184
E-mail: info@novotecargentina.com
www.novotecargentina.com

AUSTRALIA

Ballarat Industrial Supplies
www.ballind.com.au
BL Shipways & Co
www.blshipway.com.au

Gas Strut Marine and Industrial
www.gasstrutmarine.com.au

Prime Motion & Control
www.primehyd.com.au

West Vic Industrial Supplies
www.westvicindustrial.com.au

COLOMBIA

MEM Ltda
Phone: +57 (1) 334-7666
Fax: +57 (1) 282-1684
E-mail: servicioalcliente@memltda.com.co
www.memltda.com.co

INDONESIA

Pt. Himalaya Everest Jaya
Phone: +6 221 544 8956,
+6 221 544 8965
Fax: +6 221 619 4658,
+6 221 619 1925
E-mail: hejplastic-div@centrin.net.id
www.hej.co.id

DENMARK

LINAK Danmark A/S
Phone: +45 86 80 36 11
Fax: +45 86 80 90 51
E-mail: linak@linak-silkeborg.dk
www.linak.dk

FINLAND

LINAK OY
Phone: +358 10 841 8700
Fax: +358 10 841 8729
E-mail: linak@linak.fi
www.linak.fi

FRANCE

LINAK France E.U.R.L
Phone: +33 (0) 24 36 34 34
Fax: +33 (0) 24 36 35 00
E-mail: linak@linak.fr
www.linak.fr

GERMANY

LINAK GmbH
Phone: +49 6043 9655 00
Fax: +49 6043 9655 60
E-mail: info@linak.de
www.linak.de

INDIA

LINAK A/S India Liaison Office
Phone: +91 120 4393335
Fax: +91 120 4273708
E-mail: info@linak.in
www.linak.in

IRELAND
LINAK UK Limited - Ireland
Phone: +44 (0)121 544 2211
Fax: +44 (0)121 544 2552
+44 (0)796 855 1606 (UK Mobile)
+35 387 634 6554 (Republic Of Ireland Mobile)
E-mail: sales@linak.co.uk
www.linak.co.uk

INDIA

LINAK New Zealand Ltd.
Phone: +64 9580 2071
Fax: +64 9580 2072
E-mail: nzsales@linak.com.au
www.linak.co.nz

IRAN

Bod Inc.
Phone: +98 2188998635 - 6
Fax: +98 2188954481
E-mail: info@bod.ir
www.bod.ir

MEXICO

ILSA S.A. de C.V.
Phone: +52 (55) 5388-3960
Fax: +52 (55) 5388-3966
E-mail: linak@ilsamexico.com
www.ilsamexico.co

PERU

Percy Martin Del Aguila Ubillus
Phone: +51 99- 883-9879

RUSSIAN FEDERATION

000 FAM
Phone: +7 812 3319333
Fax: +7 812 3271454
E-mail: purchase@fam-drive.ru
www.fam-drive.ru

SINGAPORE

Servo Dynamics Pte. Ltd.
Phone: +65 6844 0288
Fax: +65 6844 0070
E-mail: servodynamicst@servo.com.sg
www.servo.com.sg

ITALY

LINAK Italia S.r.l.
Phone: +39 02 48 46 33 66
Fax: +39 02 48 46 82 52
E-mail: info@linak.it
www.linak.it

JAPAN

LINAK K.K.
Phone: 81-45-533-0802
Fax: 81-45-533-0803
E-mail: linak@linak.jp
www.linak.jp

MALAYSIA

LINAK Actuators Sdn. Bhd.
Phone: +60 4 210 6500
Fax: +60 4 226 8901
E-mail: info@linak-asia.com
www.linak.my

NETHERLANDS

LINAK Actuator-Systems B.V.
Phone: +31 76 5 42 44 40
Fax: +31 76 5 42 61 10
E-mail: info@linak.nl
www.linak.nl

NEW ZEALAND

LINAK New Zealand Ltd.
Phone: +64 9580 2071
Fax: +64 9580 2072
E-mail: nzsales@linak.com.au
www.linak.co.nz

NETHERLANDS

LINAK Actuators, S.L.u
Phone: +34 93 588 27 77
Fax: +34 93 588 27 85
E-mail: linakact@linak.es
www.linak.es

SPAIN

LINAK Actuadores, S.L.u
Phone: +34 93 588 27 77
Fax: +7 495 687 14 26
E-mail: info@linak.ru
www.linak.ru

SOUTH AFRICA

Industrial Specialised Applications CC
Phone: +27 11 312 2292 or
+27 11 2077600 (switch Board)
Fax: +27 11 315 6999
E-mail: garth@isagroup.co.za
www.isaza.co.za

UNITED ARAB EMIRATES

Mechatronics
Phone: +971 4 267 4311
Fax: +971 4 267 4312
E-mail: mechatron@emirates.net.ae
www.mechatronics.ae

UNITED KINGDOM

LINAK UK Limited
Phone: +44 (0)121 544 2211
Fax: +44 (0)121 544 2552
E-mail: sales@linak.co.uk
www.linak.co.uk

NORWAY

LINAK Norge AS
Phone: +47 32 82 90 90
Fax: +47 32 82 90 98
E-mail: info@linak.no
www.linak.no

POLAND

LINAK Polska
Phone: +48 (22) 500 28 74
Fax: +48 (22) 500 28 75
E-mail: dkreh@linak.dk
www.linak.pl

REPUBLIC OF KOREA

LINAK Korea Ltd.
Phone: +82-02-6231-1515
Fax: +82-02-6231-1516
E-mail: scully@linak.kr
www.linak.kr

RUSSIAN FEDERATION

000 LINAK
Phone: +47 495 280 14 26
Fax: +7 495 687 14 26
E-mail: info@linak.ru
www.linak.ru

SWITZERLAND

LINAK AG
Phone: +41 43 388 21 88
Fax: +41 43 388 31 87
E-mail: info@linak.ch
www.linak.ch

TAIWAN

LINAK A/S Taiwan Representative Office
Phone: +886 2 27290068
Fax: +886 2 27290096
Mobile: +886 989292100
E-mail: michael.chen@linak.com.tw
www.linak.com.tw

TURKEY

LINAK İ.İ.İ. Ihr. San. ve Tic. A.Ş.
Phone: +90 312 4726338
Fax: +90 312 4726635
E-mail: info@linak.com.tr
www.linak.com.tr

UNITED KINGDOM

LINAK UK Limited
Phone: +44 (0)121 544 2211
Fax: +44 (0)121 544 2552
E-mail: sales@linak.co.uk
www.linak.co.uk

For contact details on other countries please visit www.linak.com or contact:

LINAK INTERNATIONAL

Phone: +45 73 15 15 15
Fax: +45 74 45 90 10
Fax: +45 73 15 16 13 (Sales)
E-mail: info@linak.com
www.linak.com

Terms of use

The user is responsible for determining the suitability of LINAK products for specific application. LINAK takes great care in providing accurate and up-to-date information on its products. However, due to continuous development in order to improve its products, LINAK products are subject to frequent modifications and changes without prior notice. Therefore, LINAK cannot guarantee the correct and actual status of said information on its products. While LINAK uses its best efforts to fulfil orders, LINAK cannot, for the same reasons as mentioned above, guarantee the availability of any particular product. Therefore, LINAK reserves the right to discontinue the sale of any product displayed on its website or listed in its catalogues or other written material drawn up by LINAK. All sales are subject to the Standard Terms of Sale and Delivery for LINAK. For copy hereof, please contact LINAK.

LINAK® 
WE IMPROVE YOUR LIFE